

Evaluating the likelihood of the adoption of the Welfare Quality assessment system for farm livestock

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Abstract

The Welfare Quality assessment system aims to accommodate societal concerns and market demands to improve animal welfare by developing reliable on-farm monitoring systems, product information systems and practical species-specific strategies. Currently this system has been developed and is ready to be adopted. Therefore, the main objective of the study reported here was to examine whether the organizations that offer and set standards to farmers will adopt the WQ system. This research consisted of a literature review, interviews with retailers and processors, and a conjoint study to evaluate the perceived adoption likelihood of the WQ welfare assessment system by organizations that formulate standards for pigs, cattle and poultry.

The overall results show that the presence of a legitimate third party organization that supports the implementation process of the WQ assessment system would have a stronger influence on the decision whether or not to adopt the WQ scheme than societal pressure, the absence of additional costs and freedom with respect to the formulation of norms. A third party organization would also increase the probability of adoption for those standards formulating organisations that are still uncertain whether they will adopt the system. The findings shed light on the discussion over the costs of animal welfare measurement. Namely, concerns with regard to measurement costs could partially be explained by a lack of overall clarity on the costs and benefits of the system itself.

Paper is presented at ATINER (3rd Annual International Conference on Agricultural Research) July 15-18, 2010, Athens, Greece

Introduction

The Welfare Quality assessment system aims to accommodate societal concerns and market demands to improve animal welfare by developing reliable on-farm monitoring systems, product information systems and practical species-specific strategies. Currently this system has been developed and is ready to be adopted (Welfare Quality® consortium, 2009a; Welfare Quality® consortium, 2009b; Welfare Quality® consortium, 2009c). Therefore, the main objective of the study reported here was to examine whether the organizations that offer and set standards to farmers will adopt the WQ system.

A literature review was initially carried out in order to understand the likely basic patterns of adoption of the WQ system by different stakeholders and to explore the potential measures which could be used to assess the extent of adoption of the scheme in the future. Based on the literature review, a theoretical model for the adoption of the WQ system was developed. This was then tested with relevant stakeholders by means of interviews and a conjoint analysis. The research consisted of two main studies. In Study 1, interviews were carried out with international retailers and processors involved in processing and/or selling pig meat, chicken meat and/or hen eggs in six different EU countries (UK, Netherlands, Italy, Denmark, Spain and Sweden). The main objective of Study 1 was to find out the perceptions towards acceptability and adoption possibilities of the WQ system held by retailers and food processors. In Study 2, a conjoint analysis was designed to evaluate the perceived adoption likelihood of the WQ system by different standards formulating organisations (referred as to SFOs in the remainder of the text) in three sectors (pigs, laying hens and broilers) in the UK, Netherlands, Italy, Norway, Germany, Sweden. Here, we examine the question 'what is the likelihood that organizations that offer and set standards to farmers will adopt the WQ system?'.

Theoretical framework

Implementation of the WQ system is seen here as an adoption process for a new product or technology, in which any relevant stakeholder may favour, stimulate or adopt the use of the assessment methodology. The results of the literature review showed that basic patterns of adoption and adoption measures are different for key stakeholders. Four groups of stakeholders were identified as being critical for the WQ system:

- 1) Consumers
- 2) Farmers
- 3) Retailers
- 4) Standards formulating organizations (SFOs)

For each group of stakeholders the adoption possibilities for the WQ system have been identified by choosing a suitable model for the adoptions of a new product/technology from the theory

Stakeholder group 1: Consumers

For consumers, a successful product adoption will go through a period of slow adoption before experiencing a sudden period of rapid adoption and then a gradual levelling off (the Bass diffusion model). According to this model, the number of consumers adopting a new product (e.g. WQ system labelled products) at time t can be calculated by formula (1) using three parameters: m , p and q . The ratio of these coefficients defines the shape of the sales curve and the speed of the diffusion; their typical sizes are responsible for the commonly observed S-shape curve of new product sales for most consumer durables (e.g. Van den Bulte & Stremersch, 2004; Hauser et al., 2006).

$$(1) \quad N_t = N_{t-1} + p(m - N_{t-1}) + q \frac{N_{t-1}}{m} (m - N_{t-1})$$

m =market potential (e.g. the total number of consumers who will eventually use/buy WQ system product)

p =coefficient of innovation which is also called external influence (e.g. mass media coverage or other external factors)

q = coefficient of imitation which is also called internal influence (e.g. “word of mouth” influence)

N_t =number adopters of WQ at time t

Thus, in the case of the WQ system, the potential indicators for this model could be the sales units of the WQ system labelled products or the market share of such products.

The consumer based model assumes that consumer purchase decisions will be the basic drivers of the dissemination of the WQ assessment scheme. However, this model is probably only relevant for the adoption of the WQ system if the EU opts for compulsory labelling through legislation.

Stakeholder group 2: Farmers

The model of adoption of an innovation by farmers is not a single act, but a process that occurs over time. Potential adopters go through different stages when interacting with a potential innovation (Rogers (2003) model on the diffusion of innovations).

Technology adoption, like most of the product development, typically has an S-curve shape. The adoption of technology passes through three main stages of a S-curve: introduction, growth and maturity. Theories exist with contingencies for

each of the three major stages (Utterback, 1994; Rogers, 2003; Hauser et al., 2006).

The possible indicators of the extent of the adoption of the WQ system by farmers could be:

- Number of farmers using the scheme per species sector;
- Number of farms using the scheme by size of farm category; and
- Numbers of animals in production whose farmers are using the scheme.

A farmer-based model assumes that farmer investment decisions are the basic drivers of the dissemination of the WQ assessment scheme. This model is probably relevant only if farmers have (market) power to decide about how they measure animal welfare.

Stakeholder group 3: Retailers

The literature review showed that the adoption of technologies by retailers can follow different models. Hauser et al., 2003 suggest a S-shaped curve, but an empirical study by Sood and Tellis (2005) suggested a step function, with sharp improvements in performance following long periods of no improvement. If we apply this thinking to the adoption and evolution of the WQ system, the number of farmers adopting the assessment system may increase shockwise, if the adoption decision is based on retailers'/SFOs' decisions (e.g. applying it to GLOBALG.A.P, applying it to organic schemes, etc.). In this case, we can say that this is a pattern when retailers' and SFOs' decisions are the basic drivers of the dissemination of the WQ system. Therefore, this model assumes that the retailers'/SFOs' decisions drive the adoption of the WQ system. This model is probably relevant only if retailers and SFOs have the power to change farmers' practices. In the last decade, food supply chains in the US and Europe have faced a process of concentration in all parts of the supply chain, determined by backward vertical integration at the initiation of powerful multiple retail buyers (Lindgreen and Hingley, 2003; Hingley, 2000). According to many empirical studies, the power in the food retail chain shifts from manufacturer to retailer (Hingley, 2005; Burt, 2000; Lamm, 1981; Cotterill, 1999). Moreover, in recent years, retailers tend to impose food quality/animal welfare requirements and standards on their supply chains (Aramyan et al., 2009). Given all these arguments in favour of the retail market power in the chain, we assume that retailers'/SFOs' decisions will drive adoption and dissemination of the WQ scheme rather than farmers' or consumers' decisions.

Stakeholder group 4: SFOs

Retailers and food processing companies often don't develop standards themselves, but they leave this task to SFOs, like GLOBALG.A.P or organic schemes. A SFO is defined as "a non-governmental organization that develops

one or more formal statements of rules of conduct regarding environmental and/or social domains of sustainability that producers voluntarily agree to implement.”

SFOs consist of different stakeholders that negotiate about the standards (Ingenbleek et al., 2007). If different stakeholders (such as consumers, producers, and ethical pressure groups) have different opinions about the desirable level of criteria (Suchman, 1995), the process of formulating standards becomes continuous and complex and its outcome probably reflects the influence of stakeholders participating in the SFO – particularly the stakeholder with the strongest stake (Ingenbleek and Immink, forthcoming).

Summarising the adoption possibilities for each stakeholder, it becomes obvious that the decision which stakeholder is seen as crucial to the acceptance of the WQ system is important, because different stakeholders have different adoption patterns for new products or technologies. Here, we see the adoption of the WQ system by consumers and farmers largely as a consequence of the decisions made by retailers/processors and the SFOs that formulate and implement standards on behalf of these companies. The crucial variable is, therefore, the support that retailers and processors provide to the system and the likelihood that SFOs will actually include the system in the standards that they offer. Therefore, Study 1 focuses on the adoption possibilities of the WQ system by retailers/processors, while Study 2 concentrates on the possibilities of adoption of the WQ system by SFOs.

Study 1

Methods

In Study 1, a series of telephone interviews were carried out in late 2009 with retailers and processing companies to obtain their views on the acceptability and adoption possibilities of the WQ system. The retailers/processors were located in six EU countries and were operating in the pig and poultry sectors. The interview was focused (Yin, 2003), and consisted of some open-ended questions and also a set of questions with multiple choice answers. The open-ended questions mostly related to acceptability and the conditions under which they thought the WQ system could be adopted. The multiple choice questions related mostly to the likelihood of the adoption of the WQ system by retailers/processors and their expectations about the time frame needed for the adoption of the WQ system.

From the 25 that were initially contacted, twelve retailers/processing companies participated in the interviews (48% response rate); they were from the UK (4), Netherlands (2), Italy (3), Sweden (1), Spain (1) and Denmark (1). Most of these companies were using at the time a combination of more than one different quality assurance system.

Results of Study 1

Overall acceptance of the WQ system

The probability of adoption of the WQ system was thought to be between 0 and 10% by the majority of the respondents. When the respondents considered picking up some elements of the WQ system only, the reason for this was that implementing a part of the system would be less costly than adopting an entirely new system.

Important factors that would influence the adoption of the WQ system were considered to be: the distribution of the power of certain stakeholders (six respondents); the urgency of animal welfare as a societal issue (four respondents); and the reputation and legitimacy of the WQ system itself (four respondents).

1. Acceptance of a cost increase

Acceptance of the system will depend on the costs involved in the implementation of the WQ system as part of existing assurance systems or as a separate system. Companies which already had a code of practice or assurance scheme were more likely to adopt the WQ system. WQ has a good probability of being adopted, since retailers are moving to outcome based standards, but farmers might need to be pushed by retailers/SFO's on this issue.

2. Scientific underpinning

The scientific base of the WQ system was seen as a strong point. At the moment, many discussions about animal welfare are based on subjective, emotional or non-scientific evidence. The WQ system should be very widely accepted because it enables a standard assessment of animal welfare, in a practical as well as in a scientific way. It also supplies knowledge to the area, and it is a tool for a need that already exists in the market.

3. Who should pay?

The answers to this question were various. Consumers have to pay, because it is an enhanced product; the retailers are responsible for the costs, since it should be market driven; and nobody has to pay as the entire chain is responsible for the extra costs.

4. Adoption patterns

There will be three adoption patterns for the WQ system according to the respondents:

- 1) GLOBALG.A.P and other standardization companies will adopt the system following by organic/biological farms (three respondents);
- 2) organic/biological farms will adopt the system followed by GLOBALG.A.P and other standardization companies (two respondents);

3) five respondents had other expectations such as the WQ system will be a separate scheme or organic farmers may pick up some elements from the WQ system, but GLOBALG.A.P is not a key player or it will depend on retailers' requirements.

4. Compulsory labelling

The WQ system should not be seen as a legislative tool according to the retail organisations. It should lead to welfare differentiation which is itself a market issue.

Study 2

Methods

In Study 2, a conjoint analysis was applied to evaluate the perceived adoption likelihood of the WQ system by SFOs. By using traditional conjoint analysis, it was possible to assess the perceived adoption likelihood of the WQ system by SFOs. Given the small amount of attributes, a full-profile traditional conjoint method was considered to be the most suitable for our study (Hair, et al. 1998). A fractional factorial design was applied, which created 8 cards (i.e. scenarios), and 2 holdout cases. Respondents were asked the following: 'Please look at each Scenario presented below separately and indicate how likely it is that your organization will adopt the WQ system under each set of conditions?' A seven points Likert scale was used, where 1 = very unlikely and 7 = very likely.

Scenario attributes

The scenario attributes that are likely to play an important role in the decisions of SFOs whether or not to adopt the WQ assessment system were chosen based on the qualitative scenarios developed in the study of Ingenbleek et al., (2009) and the interview results from Study 1 discussed above.

The proposed scenario attributes, and attribute levels, are summarised in Table 1.

The following four attributes were used in the scenarios:

- 1) Legitimacy / third party organisation: by adopting an externally developed assessment system, SFOs also adopt a risk with respect to the legitimacy of that system.
- 2) Urgency: the probability of adoption of the WQ system may be higher if external pressure from society on the SFO with regard to animal welfare increases.
- 3) Formulating of norms: another factor of influence on the decision whether or not to adopt the WQ assessment system, may be the extent to which the developers of the WQ system have already decided on the level of animal welfare.

4) Costs: the costs of implementing the WQ assessment system at the farm level refer to the production costs per animal head related to the monitoring.

Respondents

On the basis of desk research, using WQ reports, other research reports and Internet search, we identified the names of 67 SFOs that were contacted over the phone to verify whether they were indeed appropriate to participate in our study and to identify the appropriate respondent. In total, 29 SFOs from 8 European countries (UK, France, Italy, Germany, Sweden, Norway, The Netherlands and Spain) eventually took part in this study.

The research was carried out using telephone interviews with the questionnaire being sent out prior to the interviews. It consisted of three parts: 1) contextual information on the organization; 2) the scenarios; and 3) general questions. Of the 29 organizations, 21% operated only in the pig sector, 28% in the poultry sector (i.e. broilers and laying hens) and 52% operated in both the pig and poultry sectors. Those operating in both sectors were asked to provide separate answers for each sector. The results revealed that these operators do not see the adoption system of the WQ differently for different sectors.

Results

1. Best case scenarios

From Table 2 it becomes obvious that the most preferred scenario by all respondents is Scenario 2 with the highest utility score of 4.87 being highlighted in bold. This means that the likelihood of the WQ system being adopted is high when there is a high pressure from society to improve animal welfare, accompanied with flexibility with regards to how high SFOs set their standards for animal welfare. In addition, a third party organization is in existence to ensure that all indicators are updated with the latest knowledge, as well as providing extra services that help SFOs to implement the system (e.g. training) plus protecting the reputation of the WQ system. Furthermore, in this scenario, adopting the WQ system should not increase the costs for farmers associated with measurement and control.

2. Worst case scenario

From Table 2 we can also see that the least preferred Scenario by all respondents is Scenario 4 with the lowest utility score of 1.87 being highlighted in bold. This means that the adoption likelihood of the WQ system is low when pressure from society to improve animal welfare remains as it is now, combined with no flexibility with regards to setting own standards by SFOs and with no support from third party organizations. Apparently, costs do not play a big role in this scenario, with it being dominated by the other three attributes. The range of the utility

values for each of the attributes provides a measure of how important the attribute was to overall preference. Attributes with greater utility ranges play a more significant role than those with smaller ranges. The most important attribute for the adoption of the WQ system is Legitimacy (33%), the existence of a third party organisation supporting the adoption, followed by Urgency (24%), Costs (23%) and Formulation of norms (20%).

Adoption possibilities of the WQ system

The results revealed that 56% of the respondents would like to use the WQ system as a source of inspiration, while 28% would like to use it partly. Only 12 % would consider replacing the whole system, while the rest did not know yet. The relationship between the scenario attribute impotencies and the possibilities of the adoption of the WQ system is presented in Figure 1.

From Figure 1, we can see that the respondents that were considering replacing their own system entirely by the WQ system find the urgency very important, while the organizations that still don't know whether to adopt the system or want to use it as a source of inspiration, find legitimacy very important. Respondents that consider adopting some part of the WQ system rank the freedom to define one's own norms as most important.

Conclusions

In Study 1, two main concerns expressed by retailers and processing companies regarding the adoption of the WQ system stood out: the costs of implementing the WQ system and whether the WQ system will become a part of existing assurance systems or will exist as a separate scheme. The second concern is related to the first issue, since by implementation of the WQ system within the existing assurance systems, the implementation costs are perceived to be lower as compared to the costs of implementation of the entire new scheme. These findings also seem to point at a lack of understanding on what WQ precisely offers.

Findings from Study 2 suggest that the WQ system is most likely to be adopted by the SFOs under the following conditions (in subsequent order): existence of a third party organization that protects and updates the scheme and that supports its adoption; increasing pressure in society from animal-interest groups; no extra costs and flexibility with regard to the norms, allowing deviations from the recommended framework of excellent, enhanced, acceptable and unacceptable levels of welfare. A third party organization also increases the probability of adoption for those SFOs that are still uncertain whether they will adopt the system.

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Table 1. *Proposed scenario attributes and attribute levels***A** Urgency:

- 1) The pressure from society to improve animal welfare increases significantly (e.g. much more attention from animal rights groups, media, growth of consumers' concerns).
- 2) The pressure from society remains as it is now.

B Formulation of norms:

- 1) The WQ system offers four levels at which SFOs can assure animal welfare (excellent-enhanced-acceptable-not classified). SFOs are allowed to deviate from these categories and to pick the level that they desire on both the individual measures that contribute to the final welfare quality scale and on the final scale itself.
- 2) SFOs are not allowed to set their own standards above, in between, or below those levels.

C Legitimacy of the WQ assessment system:

- 1) A third party organization exists to ensure that all indicators are updated to the latest knowledge, as well as providing extra services that help you to implement the system (e.g. training) plus protecting the reputation of WQ system.
- 2) A third party organization does not exist to ensure that all indicators are updated to the latest knowledge, as well as providing extra services that help you to implement the system (e.g. training) plus protecting the reputation of WQ system.

D Costs involved in implementing the WQ assessment system at the farm level:

- 1) Adopting the WQ system will not increase the costs for farmers associated with measurement and control, because other certification organizations have switched to WQ and thus also require the farmers to use the system.
- 2) Adopting the WQ system will increase the costs for farmers associated with measurement and control. The estimated cost increase varies between 0,5%-1,0% of the production costs per head related to monitoring.

Table 2. Total utility for each Scenario

Scenario	Urgency	Formulation of norms	Legitimacy	Involved costs	Total Utility
1	Normal pressure	Allowed to deviate from framework	A third party organization exists to support adoption	No costs	4,09
2	Increasing pressure	Allowed to deviate from framework	A third party organization exists to support adoption	No costs	4,87
3	Normal pressure	Not allowed to deviate from framework	A third party organization exists to support adoption	Costs involved	2,33
4	Normal pressure	Not allowed to deviate from framework	A third party organization does not exists to support adoption	No costs	1,87
5	Increasing pressure	Not allowed to deviate from framework	A third party organization does not exists to support adoption	No costs	2,65
6	Normal pressure	Allowed to deviate from framework	A third party organization does not exists to support adoption	Costs are involved	1,95
7	Increasing pressure	Allowed to deviate from framework	A third party organization does not exists to support adoption	Costs are involved	2,73
8	Increasing pressure	Allowed to deviate from framework	A third party organization exists to support adoption	Costs are involved	3,11

Figure 1 Relationship between the adoption possibilities of the WQ system and the attribute importance

